**Center Independent Research & Development: GSFC IRAD**

# Soft X-ray Absorbers Enabling Study of the Diffuse X-ray Background

Completed Technology Project (2012 - 2013)

## Project Introduction

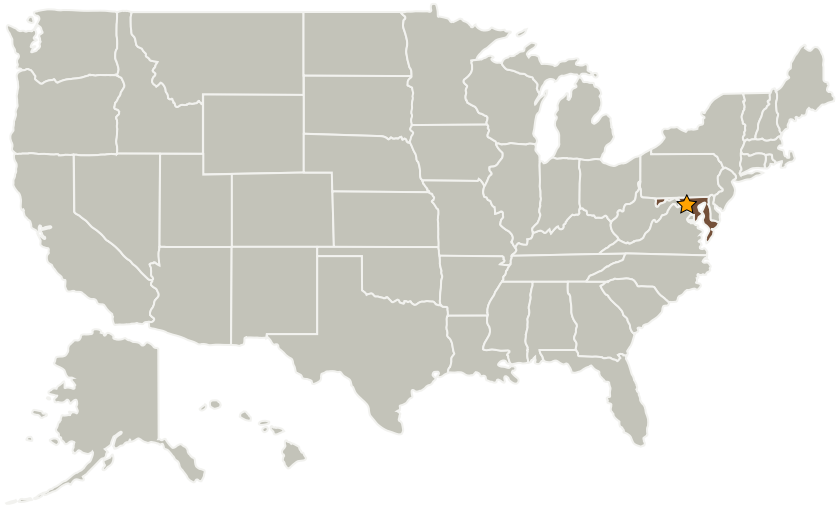
Fabricate and demonstrate performance of new large-area soft x-ray absorbers, using techniques that allow integration with either magnetic penetration thermometers (MPT) or transition-edge sensors (TES) to make high-resolution microcalorimeter arrays with large total collecting area.

Absorbers for soft x-rays need to be made thinner and with larger area, to collect more photons, and with minimal number of support stems. However, the structure is then more challenging to fabricate and more subject to distortion or damage from internal or external stress. We will test multiple fabrication/design innovations.

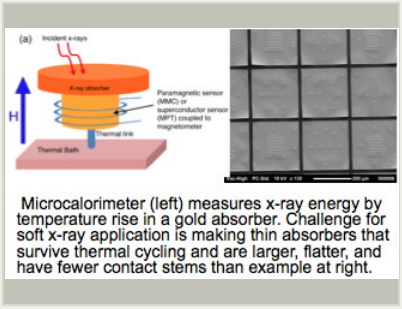
## Anticipated Benefits

N/A

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |




Microcalorimeter (left) measures x-ray energy by temperature rise in a gold absorber. Challenge for soft x-ray application is making thin absorbers that survive thermal cycling and are larger, flatter, and have fewer contact stems than example at right.

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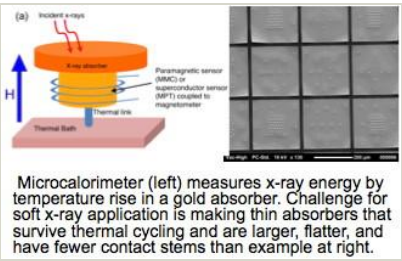
## Primary U.S. Work Locations

Maryland

## Images




Microcalorimeter (left) measures x-ray energy by temperature rise in a gold absorber. Challenge for soft x-ray application is making thin absorbers that survive thermal cycling and are larger, flatter, and have fewer contact stems than example at right.

**11805-1360281671442.jpg**
Soft X-ray Absorbers Enabling Study of the Diffuse X-ray Background
*(https://techport.nasa.gov/image/1628)*

## Project Website:

http://aetd.gsfc.nasa.gov/

## Organizational Responsibility

**Responsible Mission Directorate:**

Mission Support Directorate (MSD)

**Lead Center / Facility:**

Goddard Space Flight Center (GSFC)

**Responsible Program:**

Center Independent Research & Development: GSFC IRAD

## Project Management

**Program Manager:**

Peter M Hughes

**Project Manager:**

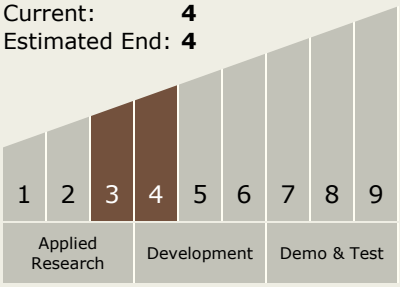
Terry Doiron

**Principal Investigator:**

Thomas R Stevenson

## Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes